

judging a resolution of the image signal;
detecting a change between pictures of the image signal; and
adaptatively interpolating the image signal in accordance with the
judgement results in said judging step and with the detection results in said detecting step.

20. (Amended) A display control method comprising the steps of:
inputting an image signal;
judging a resolution of the image signal;
selecting one of a first display mode and a second display mode to
display the image signal on a display device; and
adaptatively interpolating the image signal in accordance with the
judgement results in said judging step and with the selection results in said selecting step.

21. (Amended) A display control method comprising the steps of:
selectively inputting one of a computer input image signal and a
television input image signal;
judging a resolution of the input image signal; and
adaptatively interpolating the input image signal in accordance with the
selection results in said inputting step and with the judgement results by said judging step.

REMARKS

Claims 1-21 are presented for consideration, with Claims 1, 9, 13, 19, 20 and
21 being independent.

The abstract has been reviewed and amended to correct minor informalities and improve its idiomatic English form. In addition, the independent claims and selected dependent claims have been amended to effect editorial changes.

Initially, Applicant notes with appreciation that Claims 10, 14 and 15 were indicated as containing patentable subject matter. These claims remain in dependent form, however, as it is respectfully submitted that parent Claims 9 and 13 are patentable in their own right for the reasons discussed below.

Claims 1-9, 11-13 and 16-21 stand rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Kesatoshi '937. This rejection is respectfully traversed.

Applicant's invention as set forth in Claim 1 relates to a display control apparatus comprised of an input unit arranged to input an image signal, a judgement unit arranged to judge a resolution of the image signal, and a detection unit arranged to detect a change between pictures of the image signal. In addition, an interpolation unit adaptatively interpolates the image signal in accordance with the judgement results by the judgement unit and with the detection results by the detection unit.

Claim 9 relates to a display control apparatus that includes an input unit and a judgement unit as set forth in Claim 1, and a selection unit arranged to select one of a first display mode and a second display mode to display the image signal on a display device. In addition, an interpolation unit is arranged to adaptatively interpolate the image signal in accordance with the judgement results by the judgement unit and with the selection results by the selection unit.

Claim 13 relates to a display control apparatus that includes an input unit arranged to selectively input one of a computer input image signal and a television input image

signal, and a judgement unit to judge a resolution of the input image signal. Additionally, an interpolation unit adaptatively interpolates the image signal in accordance with the selection results by the input unit and with a judgement results by the judgement unit.

Claims 19, 20 and 21 relate to a display control method and correspond to Claims 1, 9 and 13, respectively.

In accordance with Applicant's claimed invention, the image signal is interpolated in accordance with judgement results of a resolution of the image signal and additional detection results or selection results. In this way, a display control method and apparatus can provide a superior image.

The Kesatoshi patent relates to a video image scaler in which an input image signal is converted to a predetermined resolution corresponding the display apparatus. By using a memory table (see Figure 4), the image input signal is reduced or enlarged to convert the resolution into that of the display device.

In contrast to Applicant's claimed invention, however, Kesatoshi does not teach or suggest, among other features, interpolating the image signal in the manner recited in Applicant's claimed invention. In Claims 1 and 19, for example, the image signal is interpolated based on the judgement results of the resolution of the image signal and the detection of a change between pictures of the image signal. In Claims 9 and 20, the image signal is interpolated in accordance with the judgement results of the image signal and the selection results of a first display mode and a second display mode. Finally, in Claims 13 and 21, the image signal is interpolated based on the judgement results of the resolution of the input image signal and the selection results of the input computer image signal or the television input image signal.

Kesatoshi, on the other hand, is understood to use a single interpolation method in which a video scaler 36 expands or contracts the video image to make the resolution

of the input video signal coincident with a standard resolution of the display device, e.g., LCD panel 40 (see column 3, lines 40-47).


Accordingly, reconsideration and withdrawal of the rejection of the claims under 35 U.S.C. §102(e) is respectfully requested.

Therefore, it is submitted that Applicant's invention as set forth in independent Claims 1, 9, 13 and 19-21 is patentable over the cited art. In addition, dependent Claims 2-8, 10, 12 and 14-18 set forth additional features of Applicant's invention. Independent consideration of the dependent claims is respectfully requested.

In view of the foregoing, reconsideration and allowance of this application is deemed to be in order and such action is respectfully requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO ABSTRACT

The Abstract of the Disclosure section starting at page 47, line 2 and ending at line 16 has been amended as follows:

--A display control apparatus and a display control method are provided in which a resolution of an input image signal is judged, a change in the image signal is detected, and the image signal is adaptatively interpolated in accordance with the judgement and detection results[, in which a]. A resolution of an input image signal is judged, either a first display mode or a second display mode is selected for the display of the image signal, and the image signal is adaptatively interpolated in accordance with the judgement and selection results[, or in which]. Alternatively, either a computer input signal or a television input signal is input, a resolution of the input signal is judged, and the input signal is adaptatively interpolated in accordance with the selected input and judgement results.

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A display control apparatus comprising:

 an input [means for inputting] unit, arranged to input an image signal;

 a judgement [means for judging] unit, arranged to judge a resolution of
the image signal;

 a detection [means for detecting] unit, arranged to detect a change [in]
between pictures of the image signal; and

 an interpolation [means for] unit, arranged to adaptatively
[interpolating] interpolate the image signal in accordance with the judgement results by said
judgement [means] unit and with the detection results by said detection [means] unit.
2. (Amended) An apparatus according to claim 1, wherein said input
[means] unit can selectively input [either] one of an image signal from a computer [or] and an
image signal of a television format.
3. (Amended) An apparatus according to claim 2, further comprising:

 a conversion [means for converting] unit, arranged to convert the image
signal of the television format from a field unit signal into a frame unit signal.
4. (Amended) An apparatus according to claim 1, wherein said
interpolation [means] unit interpolates the image signal to have a horizontal resolution same as

the horizontal resolution of a display device, if said detection [means] unit detects that the change in the image signal is large, and in other cases, interpolates the image signal to have horizontal and vertical resolutions same as the horizontal and vertical resolutions of the display device.

6. (Amended) An apparatus according to claim 5, further comprising:
a control [means for controlling] unit, arranged to control to display the same image signal on a plurality of lines of the display device at the same time if said detection [means] unit detects that the change in the image signal is large.

7. (Amended) An apparatus according to claim 1, wherein said judgement [means] unit judges a resolution in accordance with a sync signal contained in the image signal.

8. (Amended) An apparatus according to claim 7, wherein said judgement [means] unit judges a resolution by measuring horizontal and vertical sync signals contained in the image signal.

9. (Amended) A display control apparatus comprising:
an input [means for inputting] unit, arranged to input an image signal;
a judgement [means for judging] unit, arranged to judge a resolution of the image signal;

a selection [means for selecting either] unit, arranged to select one of a first display mode [or] and a second display mode to display the image signal on a display device; and

an interpolation [means for] unit, arranged to adaptatively [interpolating] interpolate the image signal in accordance with the judgement results by said judgement [means] unit and with the selection results by said selection [means] unit.

11. (Amended) An apparatus according to claim 9, wherein said judgement [means] unit judges a resolution in accordance with a sync signal contained in the image signal.

12. (Amended) An apparatus according to claim 11, wherein said judgement [means] unit judges a resolution by measuring horizontal and vertical sync signals contained in the image signal.

13. (Amended) A display control apparatus comprising:
an input [means for] unit, arranged to selectively [inputting either] input one of a computer input image signal [or] and a television input image signal;
a judgement [means for judging] unit, arranged to judge a resolution of the input image signal; and

an interpolation [means for] unit, arranged to adaptatively
[interpolating] interpolate the input image signal in accordance with the selection results by said
input [means] unit and with the judgement results by said judgement [means] unit.

14. (Amended) An apparatus according to claim 13, wherein said
interpolation [means] unit interpolates the television input image signal to have a horizontal
resolution same as the horizontal resolution of a display device, if said input [means] unit selects
the television input image signal, and interpolates the computer input image signal to have
horizontal and vertical resolutions same as the horizontal and vertical resolutions of the display
device if said input [means] unit selects the computer input image signal.

15. (Amended) An apparatus according to claim 14, further comprising:
a control [means for controlling] unit, arranged to control to display the
same input image signal on a plurality of lines of the display device at the same time if the
television input image signal is selected.

16. (Amended) An apparatus according to claim 13, wherein said
judgement [means] unit judges a resolution in accordance with a sync signal contained in the
image signal.

17. (Amended) An apparatus according to claim 16, wherein said judgement [means] unit judges a resolution by measuring horizontal and vertical sync signals contained in the image signal.

18. (Amended) An apparatus according to claim 13, further comprising:
a conversion [means for converting] unit, arranged to convert the television input image signal from a field unit signal into a frame unit signal.

19. (Amended) A display control method comprising the steps of:
inputting an image signal;
judging a resolution of the image signal;
detecting a change [in] between pictures of the image signal; and
adaptatively interpolating the image signal in accordance with the judgement results [by] in said [judgement means] judging step and with the detection results [by] in said [detection means] detecting step.

20. (Amended) A display control method comprising the steps of:
inputting an image signal;
judging a resolution of the image signal;
selecting [either] one of a first display mode [or] and a second display mode to display the image signal on a display device; and

adaptatively interpolating the image signal in accordance with the judgement results [by] in said [judgement means] judging step and with the selection results [by] in said [selection means] selecting step.

21. (Amended) A display control method comprising the steps of:
- selectively inputting [either] one of a computer input image signal [or] and a television input image signal;
- judging a resolution of the input image signal; and
- adaptatively interpolating the input image signal in accordance with the selection results [by] in said [input means] inputting step and with the judgement results by said [judgement means] judging step.